ABSTRACT:

In this study, a testing rig in squeeze was designed and developed with the ability to conduct various tests especially for quasi-static squeezing at different values of magnetic field strength. Finite Element Method Magnetics (FEMM) was utilized to simulate the magnetic field distribution and magnetic flux lines generation from electromagnetic coil to the testing rig. Tests were conducted with two types of MR fluid. MRF-132DG was used to obtain the behaviour of MR fluid, while synthesized epoxy-based MR fluid was used for investigating the magnetic field distribution with regards to particle chains arrangement. Simulation results of the rig design showed that the magnetic flux density was well distributed across the tested materials. Magnetic flux lines were aligned with force direction to perform squeeze tests. Preliminary experimental results showed that stress-strain pattern of MR fluids were in agreement with previous results. The epoxy-based MR samples produced excellent metallographic samples for carbonyl iron particles distributions and particle chain structures investigation.fluctuations. The PMPAC model presented in this paper provides a framework for those working in constructionproject environments to ensure their project management systems incorporate the key activities that enable better performance.